



Natural Hazard Mitigation Plan Update

Overview



Frederick County, Maryland

August, 2016

Hazard Mitigation Planning


- **Mitigation** is the effort to reduce loss of life and property by lessening the impact of disasters.
- Mitigation plans are key to breaking the cycle of disaster damage, reconstruction, and repeated damage.

Federal Requirement (Stafford Act and 44 CFR Part 201):

FEMA requires state, tribal, and local governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects.



Hazard Mitigation Plans

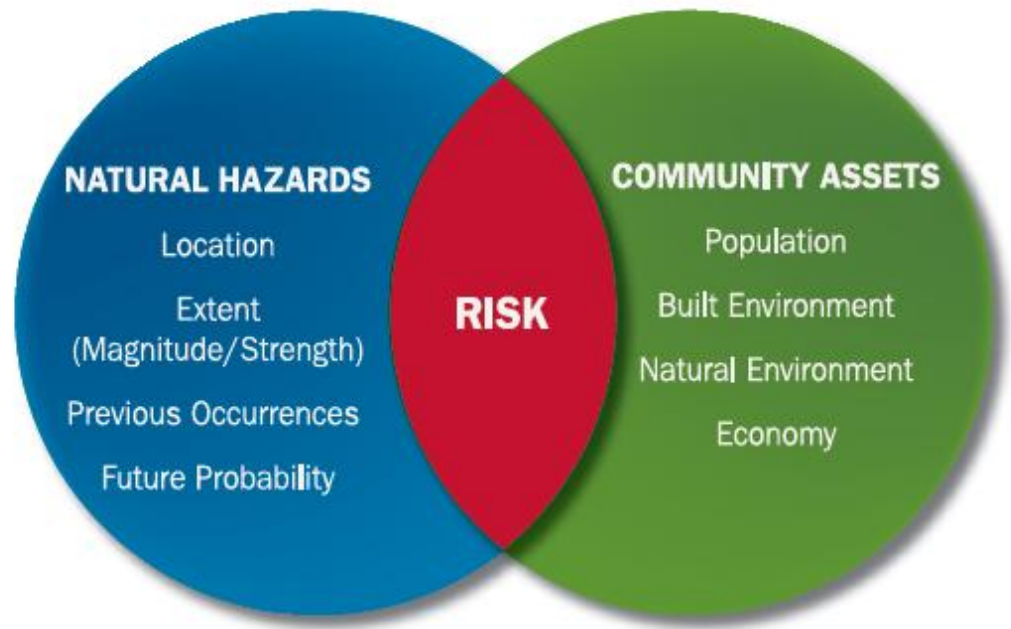
- Increase education and awareness around threats, hazards, and vulnerabilities;
 - Build partnerships for risk reduction involving government, organizations, businesses, and the public;
 - Identify long-term strategies for risk reduction;
 - Identify cost effective mitigation actions, focusing resources on the greatest risks and vulnerabilities;
 - Align risk reduction with other state, tribal, or community objectives;
 - Communicate priorities to potential sources of funding.
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Hazard Identification & Risk Assessment

Conducting a risk assessment provides the foundation for the rest of the hazard mitigation planning process.

The four basic components of a risk assessment are to:

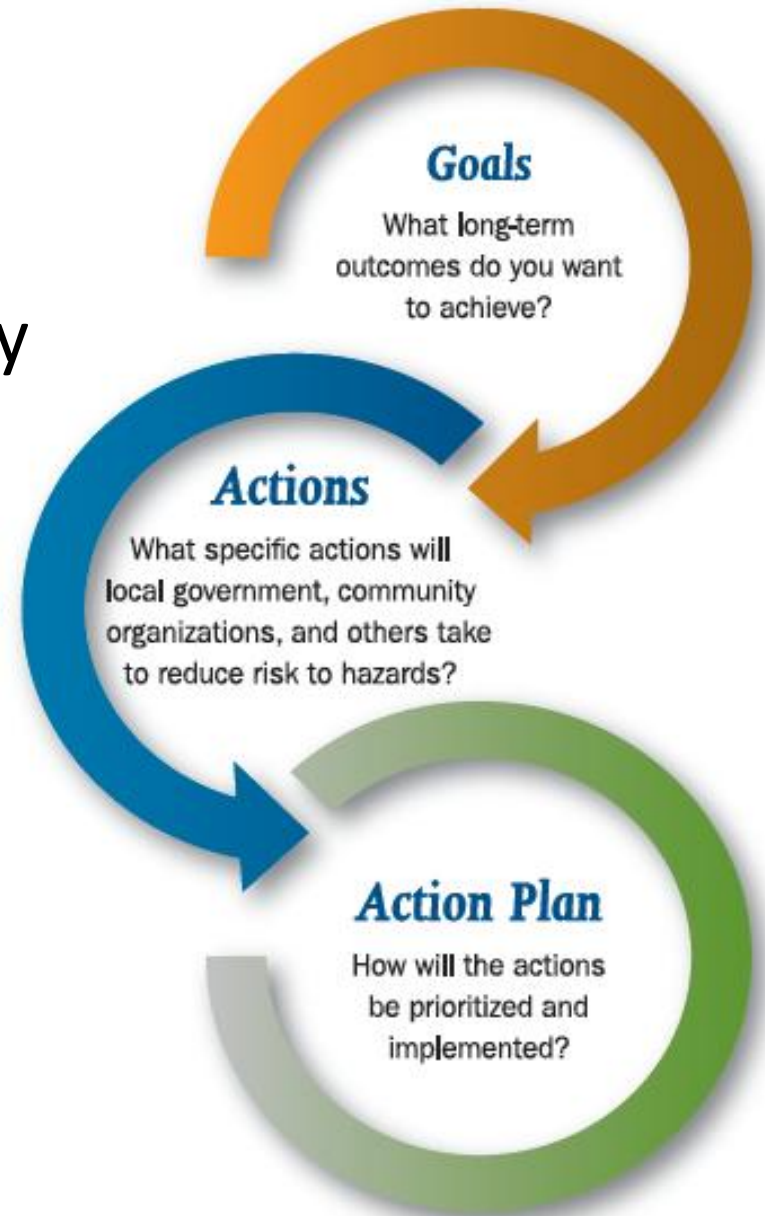
- 1) Identify hazards;
- 2) Profile hazard events;
- 3) Inventory assets and
- 4) Estimate losses.



Mitigation Strategy

The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process.

Must include goals that represent what the community seeks to achieve through mitigation plan implementation.



Mitigation Actions

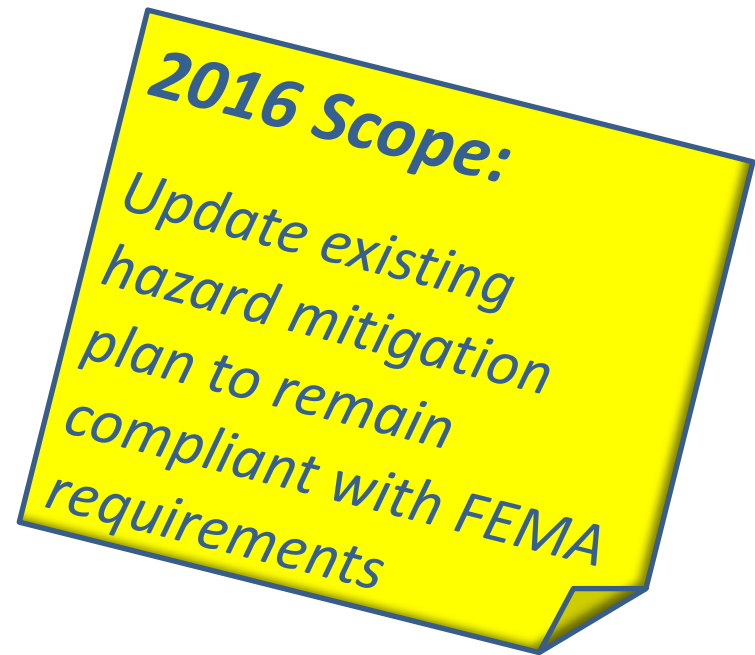
A mitigation action is a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people and property from hazards and their impacts.

Primary types of mitigation actions include:

- local plans and regulations,
- structure and infrastructure projects,
- natural systems protection, and
- education and awareness programs.

As part of the new plan the committee updated the Hazard information, Critical facilities list, and new loss estimation.

We created new goals, objectives, and projects for the county and each municipality



Jurisdiction Specific Analysis

HIRA & Mitigation Actions

Hazard Identification

Table 2.1 Hazard Identification

Hazard Type	New in 2015
Atmospheric Hazards	
Extreme Heat	Updated hazard history
Extreme Wind	Updated hazard history
Thunderstorm	Previously included as part of extreme wind; updated hazard history
Hailstorm	Previously included as part of thunderstorm; updated hazard history
Lightning	Updated hazard history
Severe Winter Weather	Updated hazard history
Tornado	Updated hazard history
Tropical Storm/Hurricane	Updated hazard history
Hydrological Hazards	
Drought	Updated hazard history
Flash Floods and Flooding	Updated hazard history; updated critical facility analysis
Dam and Levee Failure	Previously included in the manmade hazard annex; updated hazard history; updated critical facility analysis
Wildfire Hazards	
Wildfire/Wildland Urban Interface	Updated hazard history; updated critical facility analysis
Geological Hazards	
Earthquake	Updated hazard history; updated critical facility analysis
Landslide	Updated hazard history; updated critical facility analysis
Karst/Land Subsidence	Updated hazard history; updated critical facility analysis

Frederick County, Maryland Hazard Mitigation Plan



Critical Facilities

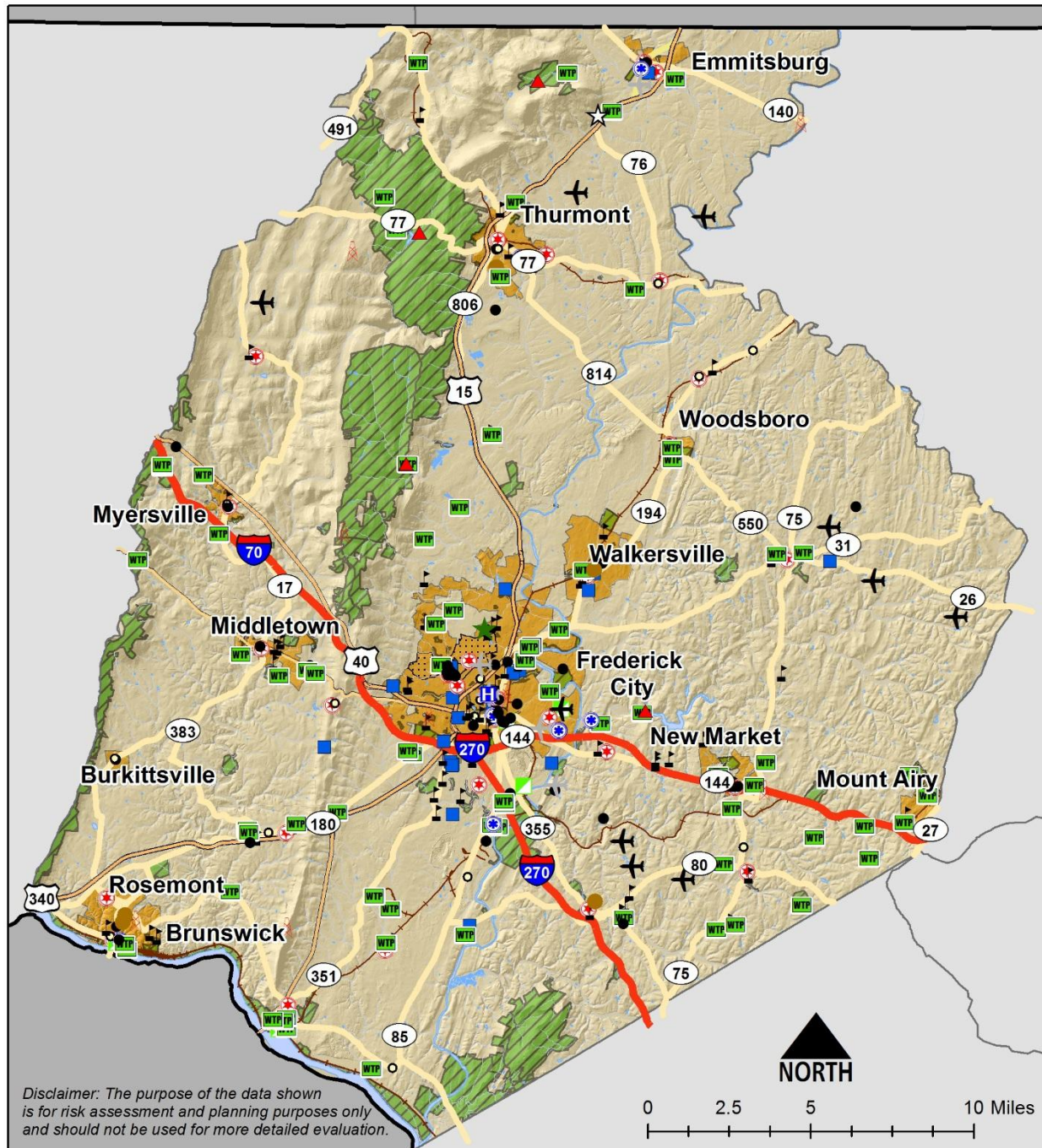
Legend

- Airport
- Heliport
- High Hazard Dams
- Hospital
- Fire/EMS
- Law Enforcement
- Library
- Nursing and Care Facility
- Post Office
- Public Facility
- Public School
- Radio Tower
- Transportation
- WTP/WWTP
- Fort Detrick
- Frederick Community College
- Mount St Mary's University
- Parks
- Municipalities
- Unincorporated County

Description

The map shows critical facilities and emergency services distributed throughout Frederick County.

Coordinate System:
NAD 1983 Maryland State Plane
Data Sources:
Frederick County GIS, ESRI



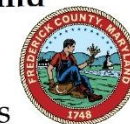
Disclaimer: The purpose of the data shown is for risk assessment and planning purposes only and should not be used for more detailed evaluation.

Hazard Priority Ranking

Table 3.34 Hazard Priority Level Comparison

Hazards Type	Probability/ History	Vulnerability	Maximum Threat (Geographic Area Affected)	Warning Time	2009 Committee Ranking	2015 Priority Level
Atmospheric Hazards						
Extreme Heat	Highly Likely	Negligible	Large	Extended	Low	Medium
Thunderstorm	Highly Likely	Negligible	Small	Minimal	High	Medium
Extreme Wind	Highly Likely	Limited	Small	Minimal	High	Medium-High
Hailstorms	Somewhat Likely	Negligible	Isolated	Minimal	Medium	Medium-Low
Lightning	Highly Likely	Negligible	Isolated	Minimal	Medium	Medium
Severe Winter Weather	Highly Likely	Critical	Large	Limited	High	High
Tornado	Likely	Negligible	Isolated	No Notice	High	Medium
Tropical Storm/ Hurricane	Somewhat Likely	Limited	Medium	Extended	Medium	Medium
Hydrological Hazards						
Drought	Likely	Negligible	Medium	Extended	Medium	Medium
Flash Floods and Flooding	Highly Likely	Critical	Small	Minimal	High	High
Dam and Levee Failure	Unlikely	Negligible	Small	No Notice	Low	Low
Wildfire Hazards						
Wildfire/WUI	Highly Likely	Negligible	Small	No Notice	Medium	Medium
Geological Hazards						
Earthquake	Unlikely	Limited	Small	No Notice	Low	Medium-Low
Landslide	Unlikely	Limited	Small	No Notice	Low	Medium-Low
Karst/Land Subsidence	Highly Likely	Limited	Isolated	No Notice	High	Medium-High

Frederick County, Maryland Hazard Mitigation Plan Flooded Roadways and Special Flood Hazard Areas



Legend

- Shaded (.2%) Zone X
- Zone A
- Zone AE
- Zone AO
- Zone AE with Floodway
- Areas of Concern
- Interstate
- US Highway
- US Alternate
- Business Route
- Maryland
- Railroads
- Parks
- Municipalities
- Unincorporated County

Description

The map shows FEMA mapped Special Flood Hazard Areas (SFHA) and flooded roadways.

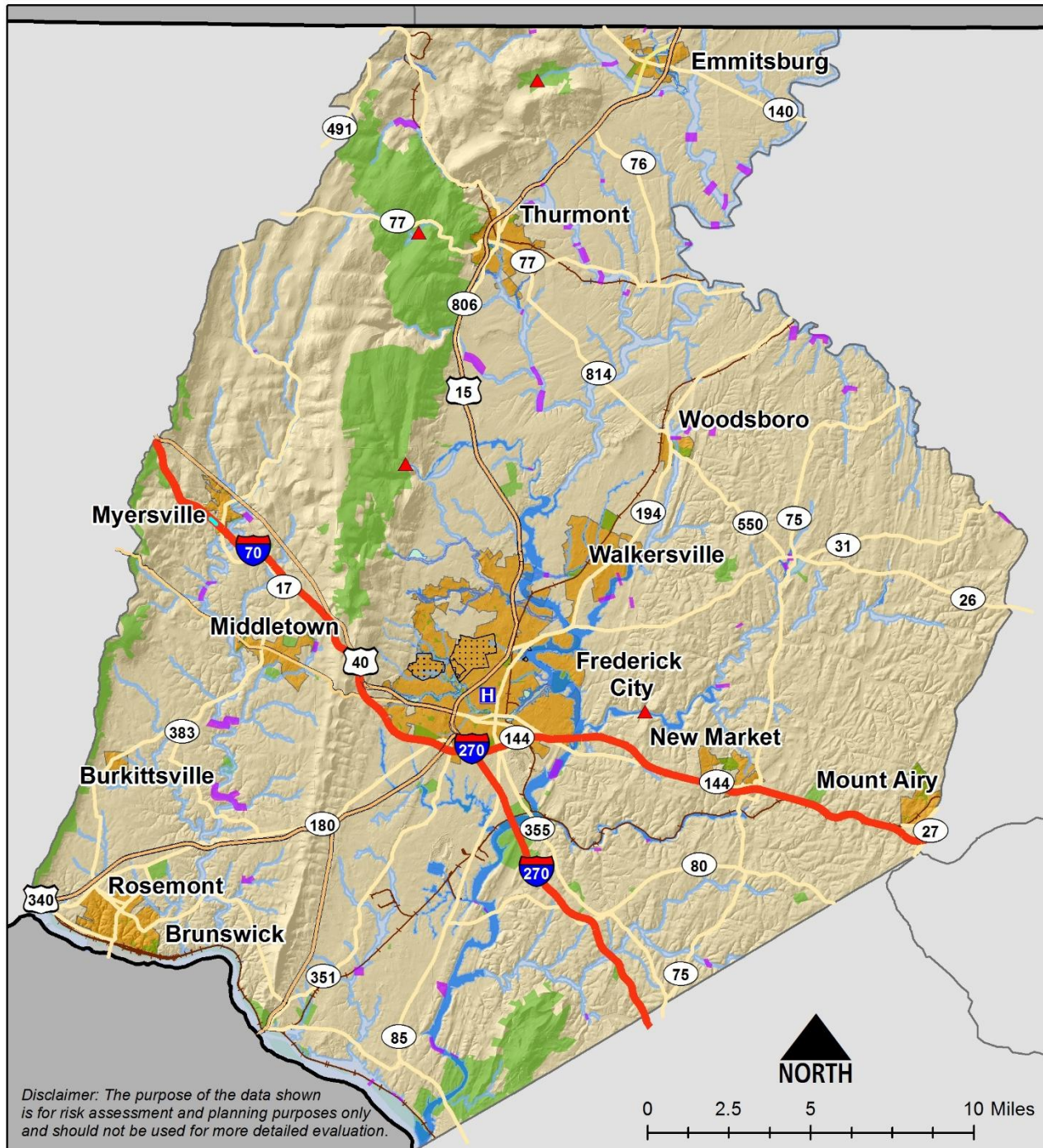
The 100-year flood is the regulatory standard NFIP participating communities administer and enforce floodplain management programs.

Coordinate System:

NAD 1983 Maryland State Plane

Data Sources:

Frederick County GIS, FEMA, ESRI



Mitigation Goals & Objectives

PUBLIC AWARENESS

GOAL A: Promote public understanding of, support for, and involvement in hazard mitigation activities.

Objective 1

Use countywide public information and education programs to advise citizens on how to protect themselves and their property from natural hazard events.

PLANS AND ORDINANCES

GOAL B: Reduce exposure to natural hazards through local planning and ordinances.

Objective 1

Review and recommend revisions to the County Comprehensive Plan, sub-area plans, municipal plans, and existing ordinances (e.g., zoning, subdivision, and floodplain) as appropriate.

Objective 2

Create an awareness of building to safe standards.

KARST/SINKHOLE

GOAL C: Reduce Frederick County's vulnerability to sinkholes.

Objective 1

Continue to educate Frederick County residents on karst.

Objective 2

Amend the County's wellhead protection ordinance to include strategies that address karst terrain/sinkholes.

Objective 3

Ensure selected storm water management techniques are appropriate for use in areas with karst terrain.

FLOODS

GOAL D: Investigate structural solutions to flooding problems.

Objective 1

Investigate the feasibility of enhancing and/or improving drainage of flood-prone lands.

GOAL E: Develop measures to protect all buildings (commercial, residential, institutional, and industrial) that are in the floodplain.

Objective 1

Continue to ensure that the current building codes, floodplain ordinances, and/or standards are kept current, follow FEMA guidelines, and are properly enforced.

Objective 2

Develop flood mitigation strategies for flood-prone properties.

Objective 3

Strengthen building codes and zoning standards, where needed.

WILDFIRES

GOAL F: Reduce the risk of wildland and urban interface wildfires in the county.

Objective 1

Continue to promote the concept of defensible spaces to county residents.

EVACUATION

GOAL G: Ensure safe and efficient evacuation routes within, to, and from Frederick County.

Objective 1

Coordinate with local, state, and regional partners to provide safe and efficient evacuation routes.

SHELTERS

GOAL H: Provide adequate multi-hazard shelters.

Objective 1

Maintain a list of designated shelters in various communities throughout the County to house residents during an emergency.

COMMUNICATION

GOAL I: Improve severe weather notification in the County.

Objective 1

Improve access in the County to severe weather and emergency notifications.

COMMUNITY-SPECIFIC NEEDS

GOAL J: Identify community-specific needs to reduce risks to various hazards.

Objective 1

The Frederick County Department of Emergency Preparedness will continue to work with all municipalities in the county to identify needs, abilities, and resources to implement appropriate mitigation efforts.

CRITICAL INFRASTRUCTURE AND FACILITIES

GOAL K: Reduce the impact of hazards on critical infrastructure and facilities.

Objective 1

Ensure that critical infrastructure nodes and facilities have reliable power supply.

Next Steps

- Preliminary Approval by MEMA and FEMA
- then adoption by county and each municipality

Questions?

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City of Brunswick

Goals:

- Goal B: Reduce exposure to natural hazards through local planning and ordinances.
- Goal D: Investigate Structural Solutions to Flooding Problems;
- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Identify, map in GIS, and prioritize high yield options to reduce the impact of stormwater flooding throughout the City, which is characterized by steep flood-prone slopes leading downstream to the Potomac River.
2. Consider providing battery-operated radios, flashlights, etc., to residents, free-of-charge.
3. Revise existing ordinances as appropriate for Brunswick.
4. Continue tree-trimming program and tree maintenance in City of Brunswick.

Town of Burkittsville

Goals:

- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Replacement of failing CMP storm drain along East Main St. and replacement of 3 box culverts.

Town of Emmitsburg

Goals:

- Goal B: Reduce exposure to natural hazards through local planning and ordinances.
- Goal E: Develop measures to protect all buildings (commercial, residential, institutional, and industrial) that are in the floodplain.
- Goal G: Ensure safe and efficient evacuation routes within, to, and from Frederick County.
- Goal I: Improve severe weather notification in the County.

Actions/Projects:

1. Adoption of an updated Comprehensive Plan to encourage sustainable growth practices and reduce exposure to natural hazards.
2. Adoption of a “Cluster Development Ordinance” to strengthen flood plain buffers and limit infrastructure maintenance.
3. Coordinate with the State Highway Administration (SHA) to assist in the rebuilding of the bridge over Flat Run to reduce potential flooding on East Main Street.
4. Purchase a GIS system and create a complete infrastructure monitoring system. Then, add an early warning notification system to subscribers for emergency notices.

City of Frederick

Goals:

- Goal B: Reduce exposure to natural hazards through local planning and ordinances.
- Goal E: Develop measures to protect all buildings (commercial, residential, institutional, and industrial) that are in the floodplain.
- Goal I: Improve severe weather notification in the County.

Actions/Projects:

1. Identify 5 areas of localized flooding (not mapped by FEMA). Develop means of mitigation or determine course of action if mitigation is not possible. Possible strategies include making improvements to existing drainage systems to relieve flooding or purchasing property where mitigation is not possible.
2. Develop a flood warning system for citizens who do not use cell phone. Coordination with Emergency Services to utilize existing public warning systems.
3. Complete the Carroll Creek Levee. The completion of the project will protect an additional 48 properties. 2015 action: Obtain approval for final construction of Carroll Creek Levee from USACE.
4. Retrofit drainage where major roads frequently flood:
 - West Patrick Street opposite West Frederick Middle School (Maryland Route 144 – major arterial road).
 - Gas House Pike near confluence of Carroll Creek and Monocacy River (construction of new Monocacy Boulevard might relieve burden). This has been planned but not built.
 - Waverly Drive (Frederick Towne Mall, major city mall subject to flooding by Rock Creek).
5. Develop a GIS map of all city sinkholes. Require that sinkhole topography be included in all site plans in affected areas.
6. Middletown, Walkersville, and the City of Frederick should get together and urge the county to adopt a sinkhole ordinance.
7. Establish a regular maintenance inspection and preventive program for sinkholes on/near city streets.



Town of Middletown

Goals:

- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Reduce potential flooding damage by including waterbody buffer requirements in all zoning districts.

Town of Mount Airy

Goals:

- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Conduct a Vulnerability Assessment of the Town's infrastructure highlighting weaknesses in the system.
2. Install/replace emergency backup generators at all critical facilities.
3. Install a SCADA system to monitor all critical public works facilities. This is a type of computer monitoring system for water and wastewater system operations. From a desk top and/or laptop computer, all pumps, flows, chemical feeds, power usage, security door contacts, fire detectors, etc., could be monitored.

Town of Myersville

Goals:

- Goal D: Investigate structural solutions to flooding problems.
- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Conduct stream restoration of Catoctin Creek in Doubs Meadow Park to protect pedestrian trail and fields.
2. Repair utility line exposed by storm-related events in Grindstone Run.
3. Install approximately 2,000 linear feet force main 8 inch waterline and hydrant connection for fire flow suppression on Milt Summers Road to serve significant commercial and gas utility company facilities.

Town of New Market

Goals:

- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Implementation of a recently signed developer agreement to design and construct a new parkway. This will create an alternate east-west route through town and create new town evacuation route options, thereby mitigating problems that could occur in town during an emergency with a blockage of Main Street/Maryland Route 144.



Village of Rosemont

Goals:

- Goal A: Promote public understanding, support, and involvement in hazard mitigation activities.

Actions/Projects:

1. Post hazard mitigation information on village website and send out emails to the Rosemont resident listserv.

Town of Thurmont

Goals:

- Goal B: Reduce exposure to natural hazards through local planning and ordinances.
- Goal D: Investigate structural solutions to flooding problems.
- Goal J: Identify community-specific needs to reduce risks to various hazards.

Actions/Projects:

1. Reinforce stream banks along Hunting Creek in locations where the stream passes through town. Banks are eroding causing risks to private homes and businesses that are adjacent to the stream.
2. Revise existing ordinances as appropriate for Thurmont.
3. Obtain generators of various sizes for wastewater treatment and for water treatment facilities.
4. Coordinate with local fire and rescue services to develop a community emergency response plan.
5. Seek funding to mitigate flooding concerns at the Public Works Office via relocation, elevation, or levee construction.

Town of Walkersville

Goals:

- Goal B: Reduce exposure to natural hazards through local planning and ordinances.
- Goal C: Reduce Frederick County's vulnerability to sinkholes.
- Goal D: Investigate structural solutions to flooding problems.

Actions/Projects:

1. Review and update Town Design Manual.
2. Build new water plant with micro-filtration and ion exchange to replace aging plant. Due to karst geology, the town's water supply (groundwater) is vulnerable to contamination.
3. Conduct a study to assess flooding on Biggs Ford Road from Glade Creek to Kenneth Drive. Develop alternatives to reduce flooding impacts.
4. Develop a plan and procedure for inspecting and cleaning out storm drains before storm events.